

Engaging the Public

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Andromeda Galaxy, about 65,000 light-years in diameter and approximately 2.2 million light-years from Earth. This large spiral galaxy is very similar to our own galaxy, the Milky Way. The area shown in this image covers about five times the area of the full Moon. Image: NOAO/AURA/NSF T.A. Rector, B.A. Wolpa

**...to share, to inspire, to educate all Americans in
the adventure of discovering our origins.**

The goal of the Origins public engagement program is to share our stirring quests and findings with people of all ages and backgrounds, conveying the thrill of scientific discovery and technological accomplishment in space. We strive to inspire Americans, to enhance scientific literacy nationwide, and to improve science, mathematics, and technology education at all levels.

The Origins program seeks to answer questions that have endured since humans looked into the night sky from the first campfires. The age-old questions “Where did we come from?” and “Are we alone?” have always been part of humanity’s need to understand our existence and place in the universe. People have considered these questions in the realms of religion, myth, the arts, and the pop culture interest in the unknown.

Origins scientists use methods that integrate a wide range of scientific disciplines from astronomy, physics, and chemistry, to geology and paleontology, as well as micro- and evolutionary-biology. Sharing the results of the Origins quest will require as diverse a set of tools in public engagement as in science. The ideas and discoveries of the Origins program will expand people’s intellectual reach through the tools of science and the unique vantage point of space. We can accomplish this by seeking answers to fundamental questions and sharing what we learn with all humanity.

Missions Create Opportunities

Each mission of the Origins program provides unique opportunities to engage the public in the journey of discovery.

The excitement of the launch, and the ongoing drama of astronauts repairing and upgrading the Hubble Space Telescope (HST) have been of immense public interest during the first 12 years of HST’s life. Images from HST have become iconic, stimulating public excitement about space science in ways never dreamed of at the time the telescope was conceived. The future servicing mission in 2004, and the proposed return to Earth in 2010 to become a permanent exhibit at the National Air and Space Museum, will provide opportunities for public inspiration well into HST’s second decade. The James Webb Space Telescope will continue this tradition of including the public in our explorations of the farthest regions of space and time.

After its launch in early 2003, the Space Infrared Telescope Facility (SIRTF) will further open the infrared window on the universe, permitting observations in a region of the spectrum not fully visible from beneath Earth’s obscuring atmosphere. This mission provides an opportunity to engage both students and the general public in perceiving the otherwise invisible world of the infrared. Together with SIRTF, the Stratospheric Observatory for Infrared Astronomy (SOFIA) is uniquely poised to demonstrate the strength of partnerships between missions with similar goals.

The Seed of Peace

Dr. Oscar Arias Sanchez,

Nobel Peace Prize

laureate and former

President of Costa Rica,

on whether the

search for origins can

bridge science, religion,

and spirituality and

hence contribute to

world peace.



"In the past century and a half, a tragic divide has developed and grown between science and religion with regard to the origins of life, specifically human life. This division is all the sadder because it is unnecessary, and fails to take account of the best in both traditions.

As Albert Einstein once said, 'In every true searcher of Nature there is a kind of religious reverence, for he finds it impossible to imagine that he is the first to have thought out the exceedingly delicate threads that connect his perceptions.'

If each of us were to become a 'true searcher', in realms both scientific and spiritual, then I believe that we would all draw closer not only to our origins, but also to our destiny: our destiny as enlightened beings able to live in peace with each other, because we have reached a state of respect, tolerance and love that can only come with the recognition that we are more alike than unlike, and that all humanity is bound together by our very life on this planet.

Exploring the marvels of science—both on Earth and in space—is one of the best ways to tap into the wonder of the universe and, consequently, the great potential of humankind to create societies worthy of the tremendous physical gifts of creation. For when we contemplate the fact that this grand universe is somehow at our disposal, that its beauty, immensity, and mysteries touch our hearts in the deepest way, then we come to understand that though a small part of the cosmos, we are, in fact, in touch with the infinite—and therefore infinitely connected with each other. This realization is the seed of peace."

Dr. Oscar Arias Sanchez was born in 1941. After studying in the United States, he read law and economics at the University of Costa Rica in the capital, San Jose. As a student he engaged actively in the work of the National Liberation Party. Having completed his degree, he went on to take a doctorate in England, with a thesis on the subject of "Who rules Costa Rica?" Dr. Arias embarked on his political career in earnest in 1970 and was elected President in 1986. As President, he was instrumental in forging an accord between Costa Rica, Guatemala, El Salvador, Honduras, and Nicaragua to bring peace to this region of Central America long torn by strife and civil war. For this achievement, Dr. Arias was awarded the Nobel Peace Prize for 1987.

SOFIA is also an infrared observatory, but one that uses a Boeing 747 aircraft to get above most of Earth's atmosphere. Teachers will work side by side with scientists during observing flights, providing thousands of dedicated educators a chance to participate in scientific research and discovery.

The Space Interferometry Mission will take breakthrough technology into space to detect Earth-size planets around distant stars. This search for other Earths has the potential to ignite public excitement and stimulate the public imagination akin to the greatest scientific discoveries in the history of humankind.

An even more ambitious step in the search for life outside our own solar system is the Terrestrial Planet Finder. The direct detection of an Earth-like planet, including indications of a warm, wet atmosphere will bring the search for life from the realm of speculation and science fiction to the workbench of scientific investigation. We will need to be prepared to respond to the likely tremendous worldwide interest such a discovery will cause.

Engaging a Broad Audience

The Origins public engagement program aims to include all of the diverse members of the American public, with their varied backgrounds, wide range of experience, and different ages. We will reach them by forming a wide spectrum of partnerships, adopting a multimedia approach, integrating the perspectives of varying disciplines, and strategically guiding such activities through the Origins Education and Public Outreach Forum.

The involvement of scientists and engineers will be critical to present the scientific goals and results of Origins missions in greater depth, and with a broader perspective, than their images and discoveries alone provide. We recognize the skill of making scientific results accessible for general audiences while preserving intellectual authenticity as a quality that needs to be continually nurtured in interested scientists. These individuals will help us build bridges between the science realm and the lives of our audiences to extend the missions into the classrooms and living rooms of

*We engage the public,
teachers, and students
to implement NASA's
vision to inspire the next
generation of explorers.*



Education and Public Outreach

All of the activities of NASA's Office of Space Science engage the public at various levels. In the context of a science program such as Origins, these levels fit broadly into the following categories:

Formal Education

K–14 curriculum materials, teacher training and professional development, distance learning programs.

Informal Education

Museum programs, planetarium shows, traveling science exhibits and associated take-home materials.

Public Outreach

Public lectures, classroom visits, educational videos, interactive/educational websites and software.

Each of these categories interacts with every other category. Typically, however, public engagement activities for science programs are contained within one or two categories.

America. The public at large has a long-held fascination with space. We will capitalize on this fascination by showcasing the people behind the discoveries and the technological breakthroughs that enable them, thereby providing a human element to the missions.

We will work with the existing public affairs infrastructure of NASA to make scientific discoveries and results gathered by the missions promptly available in a news-oriented format. We will involve in our planning members of the communities we are aiming to serve, and we will draw on teams of writers, producers, and education specialists who have experience with our audiences to make this information understandable and relevant to the public. Wherever possible we will create opportunities for teachers and students to immerse themselves in the authentic process of discovery, thereby showing them how scientists work and how we progress from observations to scientific knowledge.

An important element in achieving these goals will be collaborative activities involving diverse communities. To reach these diverse communities we will need to use diverse means of communication.

The partnerships we seek to forge will connect:

- Science and education departments at colleges and universities
- Scientists at colleges, universities, and government agencies
- Museums, science centers, and planetaria
- Organizations serving traditionally underserved groups
- School districts
- Libraries
- Community-based organizations
- Youth club organizations

Strategic Leadership

Strategic leadership will be provided by the Origins Education Forum, operated at Space Telescope Science Institute. The Forum will help determine how the various mission outreach efforts fit into the broader educational context. It will be proactive in seeking high-leverage opportunities to maximize the usefulness and effectiveness of material, programs and services created by the Origins missions. The Forum will work with

missions to enhance activities targeted at formal (K–14) education, informal education (e.g., exhibits), news, and online audiences in a manner that minimizes duplication of effort and utilizes limited resources for maximum effectiveness. The Forum will coordinate distributed activities, and will serve as an information resource for measuring the impact of education and public outreach efforts conducted by the Origins missions and research programs.